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# Testing the Impact of Intrinsic Motivation on Employee Engagement and Exploring Age and Tenure as Moderators

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Employee engagement is a common area of focus for managers, executives, and organizational behavior researchers alike, and for good reason. It theoretically dictates how productive and efficient an organization can be, and therefore, how viable and ultimately successful the business, and, in return, its employees and stakeholders can be. There are different perspectives on how to define and measure engagement, but I consider engagement to be largely related to intrinsic motivation. If I feel engaged at work, I want to expend effort to complete tasks because I personally find doing so to be important and

rewarding. If I do not feel engaged at work, the only thing driving me to complete anything is the fear of being punished or the desire to get my paycheck. If I am not engaged, I am mostly motivated by extrinsic factors, if I'm motivated at all.

In a blockbuster book, Daniel Pink (2011) proposes that the three keys to intrinsic motivation are autonomy, mastery, and purpose. In the context of Pink's work, autonomy refers to the extent to which employees are able to direct their own work processes. Mastery speaks to the degree to which employees can acquire and build new skills, and purpose is employees' sense of connection to an organizational goal or mission that is greater than themselves. The roots of these concepts can be found in the 1980s work of Edward Deci and Richard Ryan.

One of the most prevailing and influential psychological theories related to intrinsic motivation is Deci's and Ryan's (1985) Self-Determination Theory (SDT). Prior to their work, the dominant theories of motivation revolved around external influences on behavior, such as positive reinforcement. Broadly speaking, Deci and Ryan proposed that what motivated people in the absence of consistent rewards or punishment, or why people struggled with motivation in the presence of rewards or punishment. This was missing from the early behaviorist theories. SDT proposes a spectrum of motivation "orientations" (Deci & Ryan, 1985, p. 54), ranging from completely autonomous to various degrees of controlled (Ryan & Deci, 2000). To differentiate intrinsic from extrinsic motivation, Cognitive Evaluation Theory (CET), a subset of SDT, focuses on an individual's basic human needs as key motivational levers, rather than solely focusing on the

presence or absence of punishments or rewards (Ryan & Deci, 2000). Specifically, Deci and Ryan focus on the needs for competency, autonomy, and relatedness. According to CET, competency, autonomy, and relatedness needs must be met in order for intrinsic motivation to be "catalyzed" (Ryan & Deci, 2000, p. 58).

While there is no universal definition of employee engagement, intrinsic motivation is at the core of many versions. Some proposed definitions for employee engagement include a form of workplace commitment, the extent to which employees value their jobs; connection to an organization; an elusive force of motivation; and positive attitudes towards work (Little & Little, 2006). Intrinsic motivation is inherent in many of these definitions, which reflect a connection between motivation and engagement that has been supported by research (Inceoglu & Fleck, 2010). It seems that in an employee's work experience, engagement and motivation may be quite intertwined.

The aim of this paper is to clarify the relation between motivation and engagement by exploring possible precursors to and moderating factors of engagement in the workplace. It seems logical to propose that intrinsic motivation is positively correlated with overall engagement; even further, perceived levels of autonomy, mastery, and purpose (to use Pink's, 2011, terms) should predict engagement such as when employees' self-reported levels of autonomy, mastery, and purpose are high, their perceived levels of overall engagement should also be high. Thus, my first hypothesis is that autonomy, mastery, and purpose predict perceived levels of overall engagement when controlling for age and tenure.

Any organization that employs recent gradu-

ates may notice layers of the motivation-engagement relationship beyond the orientation of employee motivation; to firms that employ individuals of diverse age ranges, engagement may seem like a function of age or experience. In other words, it may be that young workers tend to enter the workforce with boundless energy and optimism that drives their performance, or perhaps young workers do not yet fully understand why performing well is important, or what it means to them. Similar interactions may be observed between experience and engagement as employees age or gain more experience; workers may burn out or experience the passing of their professional "honeymoon phase" as the shiny gleam of their budding careers wears off and reality sets in.

My second hypothesis is that due to the nature of work experiences evolving over time as employees age and gain experience within an organization and the workforce, age and tenure will moderate the effect of intrinsic motivation on engagement. In other words, I anticipate that the effect of intrinsic motivation on engagement will vary depending on an employee's age or level of experience. Perhaps for younger, greener employees, these three idealistic aspects of intrinsic motivation are more integral for their engagement than for their more experienced colleagues. Or, perhaps, younger workers have not even fully experienced intrinsic motivation at work, and so, it is less of a function of their engagement than for more seasoned workers who have come to truly value things like autonomy, mastery, and purpose in their work.

**Method**

**Data**

This secondary analysis explored the relations between intrinsic motivation, as defined by Pink (2000), and engagement, age, and tenure, using data collected in November 2019 from 166 employees of a non-profit organization in Boston, Massachusetts. The data were collected anonymously through an on-line survey that addressed topics such as office culture, diversity, equity and inclusion practices, experiences, compensation, manager satisfaction, and employee engagement.

The four Likert-scale survey items listed below targeted the concept of employee engagement and were written based on the theoretical background outlined above. The first three directly relate to Pink’s (2000) three keys to intrinsic motivation, and the fourth focuses on perceived levels of overall engagement. These survey items were:

- I have the autonomy I need to do my job well.
- I am able to develop and improve my skills in my role.
- I feel a sense of purpose in my role and connected to the mission.
- I am engaged at work most of the time.

The survey also collected age and tenure data for each respondent. Both items below were presented as grouped multiple-choice questions to preserve anonymity; the age groupings were 24 or under, 25-39, 40-54, and 55+. The tenure groups were less than 2 years, 2-5 years, 5-9 years, and 9+ years. These two survey questions were:

- What is your age group?

- How long have you worked for the organization?

It is worth noting that while the above questions were modeled after the work of Pink (2000), the survey questions were not written by trained researchers. These questions were not tested and are at risk of validity threats. The following analysis and discussion are presented with the caveat that construct validity has not been fully examined.

**Analysis**  
*Hierarchical Regression*

To test my first hypothesis about how well autonomy, mastery, and purpose predict perceived overall engagement, I ran a hierarchical regression with the age and tenure variables added in the first block and autonomy, mastery, and purpose in a second block. This allowed me to look at how much variance in engagement was uniquely explained by autonomy, mastery, and purpose in the sample.

*Simultaneous Regression*

Next, to compare the relative predictive power of autonomy, mastery, and purpose on engagement, I regressed engagement on all five independent variables (including age and tenure as controls) in a simultaneous regression. This analysis provided coefficients for each independent variable that show which one had the biggest direct effect on engagement.

*Partial Correlations*

I had some suspicion that there could be overlap between autonomy, mastery, and purpose, partially due to the less than rigorous survey design, but also

due to the fact that they could all be perceived as positive aspects of a work environment and evaluated as similar constructs. To dive into this suspicion and tease apart the correlations between the independent and dependent variables, I looked at partial correlations.

*Interaction Tests*

Lastly and moving on to my second hypothesis about whether age or tenure affect the relation between intrinsic motivation and engagement, I tested for interactions between motivation and age and motivation and tenure. To do so, I created a new variable called “motivation” that is the mean of engagement, autonomy, and purpose, and I also created dummy variables for each group in age and tenure. These tests allowed me to see if age or tenure added statistically significant amounts of explained variance to the model.

I also graphed grouped scatterplots to examine the regression lines for each age and tenure group. Due to the repetitive nature of the datapoints in this data set, I employed jittering on the scatterplots to paint a more accurate picture of where the data tended to cluster and to see more clearly the fit of each line against the data.

**Results**  
**Hierarchical Regression**

Table 1 demonstrates that collectively, age, tenure, autonomy, mastery, and purpose predicted just under 60% of the variance in overall engagement (adjusted R<sup>2</sup>=.580, p<.05) in the sample. Autonomy, mastery, and purpose explained an additional 55.4% of the variance when added to the model following age and tenure, which was a statistically significant increase (ΔR<sup>2</sup>=.554, p<.05).

**Table 1**  
**Results of Hierarchical Regression with Age and Tenure Dummy Variables in the First Block and Autonomy, Mastery, and Purpose in the Second Block**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.223 <sup>a</sup>	.050	.012	1.09109	.050	1.306	6	150	.258
2	.777 <sup>b</sup>	.604	.580	.71142	.554	68.610	3	147	.000

**Simultaneous Regression and Partial Correlations**

A simultaneous regression showed that of the three keys to intrinsic motivation, purpose had the strongest direct effect on engagement ( $\beta$ =.590, p<.05), while mastery had a minimal, marginally significant effect ( $\beta$ =.166, p=.057). Autonomy had a minimal, non-significant effect on engagement ( $\beta$ =.097, p=.159). This means that in the sample, purpose was the strongest of the three predictors of engagement.

Especially since the relation between purpose and engagement appeared to be so strong, I looked at partial and semi-partial correlations to examine these regression results a bit more closely. The semi-partial correlation between engagement and purpose, controlling the latter for autonomy and mastery, was r=.418. Controlling both variables for autonomy and mastery, the partial correlation was r=.553. These results show that even with the effects of autonomy and mastery scrubbed from the model, purpose was strongly correlated with engagement.

**Interaction Tests**

Based on the interaction tests shown in Tables 2 and 3 below, age does not affect the way that intrinsic motivation predicts engagement, but tenure does. Ac-

cording to Table 3, the interaction between tenure and motivation explains a significant additional amount of variance in engagement ( $\Delta R^2=.025$ ,  $p<.05$ ).

Table 2  
 Results of an Interaction Test  
 Between Age and Motivation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.710 <sup>a</sup>	.504	.491	.78337	.504	38.547	4	152	.000
2	.711 <sup>b</sup>	.505	.482	.78982	.002	176	3	149	.912

a. Predictors: (Constant), Centered motivation variable, Respondent is 55 or more years old, Respondent is between 40 and 54 years old, Respondent is between 25 and 39 years old  
 b. Predictors: (Constant), Centered motivation variable, Respondent is 55 or more years old, Respondent is between 40 and 54 years old, Respondent is between 25 and 39 years old, Motivation and oldest cross-product, Motivation and young cross-product, Motivation and older cross-product

Table 3  
 Results of an interaction Between  
 Tenure and Motivation

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.714 <sup>a</sup>	.510	.497	.77837	.510	40.574	4	156	.000
2	.735 <sup>b</sup>	.535	.514	.76537	.025	2.782	3	153	.043

a. Predictors: (Constant), Centered motivation variable, Respondent has more than 9 years of experience, Respondent has 5 to 9 years of experience, Respondent has 2 to 5 years of experience  
 b. Predictors: (Constant), Centered motivation variable, Respondent has more than 9 years of experience, Respondent has 5 to 9 years of experience, Respondent has 2 to 5 years of experience, Motivation and senior cross-product, Motivation and experienced cross-product, Motivation and new cross-product

While the above tests showed me that tenure moderates the relationship between motivation and engagement, and age has no such significant effect, I wanted to be able to visualize each scenario. Figures 1 and 2 show two grouped scatterplots, with regression lines for each tenure and age group. It’s clear that the regression lines by age group are all very similar, whereas, when grouped by tenure, the lines differ a bit more noticeably. In fact, the two lines that are the most different are the two tenure groups that are on opposite ends of the spectrum – employees with the least experience are the most different from those who have the

most experience. This highlights the moderating role of tenure in the relationship between intrinsic motivation and engagement.

Figure 1  
 Scatterplot Showing the Regression of  
 Engagement on Motivation Grouped by Age

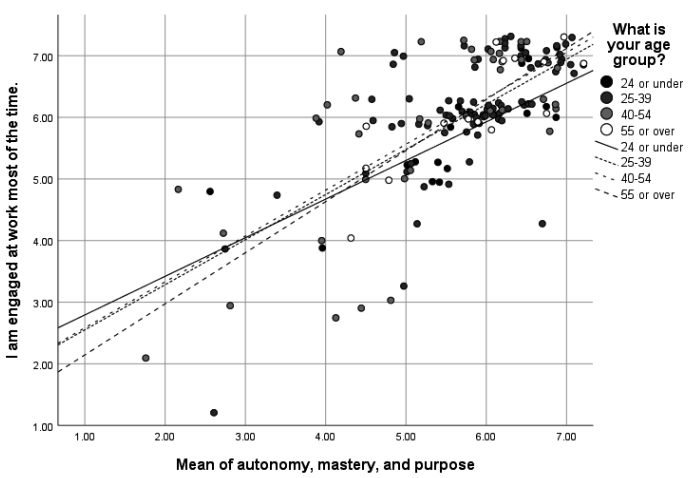
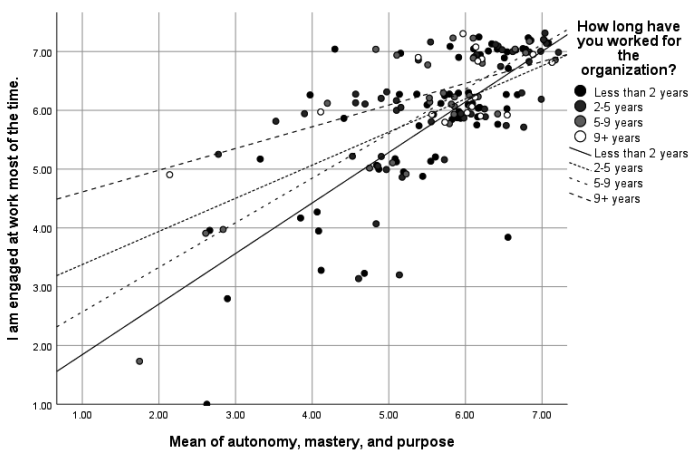


Figure 2  
 Scatterplot Showing the Regression of  
 Engagement on Motivation Grouped by Tenure



Discussion

Ultimately, this analysis supported my first hypothesis that a strong relation exists between autonomy, mastery, purpose, and engagement, and, therefore, these key conditions for intrinsic motivation contribute to feelings of engagement in the workplace in this sample. Specifically, these data show, that in this sample, connection to the organization’s mission is a strong predictor of overall engagement, meaning that generally the more connected to the mission the employees feel, the more engaged overall they feel. This suggests that these employees tend to be very mission-driven and are engaged when their work and can be easily tied back to the broader organizational mission.

It is also worth noting that the ability to refine and build skills plays a role in employee engagement; for this sample, albeit not a statistically significant one. This indicates that professional growth may be a priority for employees in this organization, and the more they feel they are able to grow and learn, the more they feel engaged in their work as a whole.

In addition, my second hypothesis was partially supported. It seems that, in this sample, the relation between intrinsic motivation and engagement changes the longer people stay with the organization. In other words, autonomy, mastery, and purpose become weaker predictors of an employee’s overall engagement the longer the employee has with the organization. While the intent of this study was not to impose an explanation of the relationship between intrinsic motivation and engagement, and these data do not allow me to say that intrinsic motivation “becomes less important” to employees as they collect years of service, these results demonstrate that something does happen to the

strength of the relationship between intrinsic motivation and engagement as tenure increases.

Limitations

The survey questions used in this analysis were not designed by data scientists, as it was not anticipated that these survey results would undergo this level of scrutiny and analysis. It is evident that as readers, we must be very clear on what responses to survey questions tell us, and what they don’t tell us, in order to correctly interpret any sort of relationship involving the response data. And in order to be very clear on what survey responses tell us, the survey questions themselves need to also be very specific, clear, and intentional to glean accurate measurements of what they intend to measure.

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